

In the Claims

This listing of claims replaces all prior versions, and listings, of claims in the application:

1-19. (Cancelled)

20. (New) A protecting element comprising:

a first high concentration impurity region formed in an insulating region of a substrate and connected to a first terminal of an element formed in the substrate; and

a second high concentration impurity region formed in the insulating region and connected to a second terminal of the element, the first and second high concentration impurity regions facing each other with a portion of the insulating region disposed therebetween,

wherein a width of the first high concentration impurity region is configured so that upon discharging of electrostatic energy applied between the first and second terminals a current path is formed in the insulating region from an outer side surface of the first high concentration impurity region to the second high concentration impurity region, the outer side surface of the first high concentration impurity region being opposite from an inner side surface of the first high concentration impurity region that faces the portion of the insulating region.

21. (New) The protecting element of claim 20, wherein the width of the first high concentration impurity region is 5 μm or smaller.

22. (New) The protecting element of claim 20, wherein a width of the second high concentration impurity region is configured so that upon the discharging of the electrostatic energy applied between the first and second terminals the current path from the outer side surface of the first high concentration impurity region reaches an outer side surface of the second high concentration impurity region, the outer side surface of the second high concentration

impurity region being opposite from an inner side surface of the second high concentration impurity region that faces the portion of the insulating region.

23. (New) The protecting element of claim 22, wherein the width of the first high concentration impurity region and the width of the second high concentration impurity region are 5 μm or smaller.

24. (New) The protecting element of claim 20, wherein a separation of the first and second high concentration impurity regions is 10 μm or smaller.

25. (New) The protecting element of claim 20, wherein a separation of the first and second high concentration impurity regions is 4 μm or larger.

26. (New) The protecting element of claim 20, wherein an impurity concentration of the insulating region is $1 \times 10^{14} \text{ cm}^{-3}$ or lower.

27. (New) The protecting element of claim 20, wherein a volume resistivity of the insulating region is $1 \times 10^3 \Omega \cdot \text{cm}$ or higher.

28. (New) The protecting element of claim 20, wherein the insulating region is configured to provide an additional current path upon the discharging between the inner side surface of the first high concentration impurity region and an inner side surface of the second high concentration impurity region and between bottom surfaces of the first and second high concentration impurity regions.

29. (New) The protecting element of claim 20, wherein the first high concentration impurity region comprises a branch portion that does not face the second high concentration impurity region and is configured to provide upon the discharging an additional current path in the insulating region between the branch portion and the second high concentration impurity region.

30. (New) The protecting element of claim 28, wherein the current path has a higher conductivity modulation than the additional current path.

31. (New) The protecting element of claim 28, wherein a current running through the current path upon the discharging is greater than a current running through the additional current path upon the discharging.

32. (New) The protecting element of claim 20, wherein a distance between the outer side surface of the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger.

33. (New) The protecting element of claim 20, wherein a distance between a bottom surface of the first high concentration impurity region and a bottom surface of the insulating portion is 20 μm or larger.

34. (New) The protecting element of claim 20, wherein the current path expands when the electrostatic energy applied between the first and second terminals becomes larger.

35. (New) The protecting element of claim 20, wherein a capacitance between the first and second high concentration impurity regions is 40 fF or smaller, and the element has a strength against electrostatic discharge at least 10 times as large as that of the element without the first and second high concentration impurity regions.

36. (New) The protecting element of claim 29, wherein the additional current path has a higher conductivity modulation than the current path.

37. (New) The protecting element of claim 29, wherein a distance between a side surface of the branch portion and an edge of the insulating region closest to the branch portion is 10 μm or larger.

38. (New) The protecting element of claim 29, wherein the additional current path expands when the electrostatic energy applied between the first and second terminals becomes larger.

39. (New) A protecting element comprising:
a first high concentration impurity region formed in an insulating region; and
a second high concentration impurity region formed in the insulating region, wherein
the first high concentration impurity region is connected to a first terminal of an element comprising a PN junction or a Schottky junction, the second high concentration impurity region is connected to a second terminal of the element,

the first and second high concentration impurity regions in the insulating region is positioned so that an electrostatic energy applied between the first and second terminals is at least partially discharged by a flow of electric current in the insulating region between the first and second high concentration impurity regions, and

a distance in the direction of the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger.

40. (New) A protecting element comprising:
a first high concentration impurity region formed in an insulating region; and
a second high concentration impurity region formed in the insulating region, wherein
the first high concentration impurity region is connected to a first electrode of a capacitor, the second high concentration impurity region is connected to a second electrode of the capacitor,
the first and second high concentration impurity regions in the insulating region is positioned so that an electrostatic energy applied between the first and second terminals is at

least partially discharged by a flow of electric current in the insulating region between the first and second high concentration impurity regions, and

a distance in the direction of the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger.

41. (New) A protecting element comprising:

a first high concentration impurity region formed in an insulating region; and
a second high concentration impurity region formed in the insulating region, wherein
the first high concentration impurity region is connected to a first terminal of an element comprising a PN junction or a Schottky junction, the second high concentration impurity region is connected to a second terminal of the element,

the first and second high concentration impurity regions in the insulating region is positioned so that an electrostatic energy applied between the first and second terminals is at least partially discharged by a flow of electric current in the insulating region between the first and second high concentration impurity regions, and

a distance in the direction normal to the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger.

42. (New) A protecting element comprising:

a first high concentration impurity region formed in an insulating region; and
a second high concentration impurity region formed in the insulating region, wherein
the first high concentration impurity region is connected to a first electrode of a capacitor, the second high concentration impurity region is connected to a second electrode of the capacitor,

the first and second high concentration impurity regions in the insulating region is positioned so that an electrostatic energy applied between the first and second terminals is at least partially discharged by a flow of electric current in the insulating region between the first and second high concentration impurity regions, and

a distance in the direction normal to the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger.